



UMASH

Upper Midwest
Agricultural Safety
and Health Center

A collaboration of the University of Minnesota School of Public Health and College of Veterinary Medicine, the National Farm Medicine Center of the Marshfield Clinic with the Migrant's Clinicians Network, and the Minnesota Department of Health.

Summary Annual Report
2013

NIOSH Center of Excellence in Agricultural
Disease and Injury Research, Education, and Prevention
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SECTION I

Center Summary:

The Upper Midwest Agricultural Safety and Health Center (UMASH) is a Center of Excellence in Agricultural Disease and Injury Research, Education, and Prevention funded by the National Institute for Occupational Safety and Health (NIOSH). The center is a collaboration of the **University of Minnesota School of Public Health** and **College of Veterinary Medicine**, the **National Farm Medicine Center of the Marshfield Clinic** with the **Migrant Clinicians Network**, and the **Minnesota Department of Health**. This collaboration brings together unique and complimentary expertise to address existing and emerging occupational health and safety issues in agriculture.

A central theme for UMASH is the interrelationship between the production practices and the farm workplace health and safety conditions. Production practices are primarily driven by social, economic and animal health considerations. In the agriculture, workplace health and safety conditions are strongly influenced by these production practices. The UMASH emphasizes the concept of **One Health** which focuses on the interdependence between animal health, human health, and the health of the environment. The UMASH also emphasizes the importance of maintaining vigilance over how changes in agriculture production can influence the health and well being of agricultural populations.



The UMASH center has seven currently **funded projects** related to health and safety in the pork production industry, methicillin-resistant *Staphylococcus aureus* (MRSA) colonization and infection in swine veterinarians, surveillance of disease and injury in dairy farmers, surveillance of zoonotic diseases in agriculture workers, immigrant dairy worker health and safety, facilitating return to work of ill and injured workers, and establishing a multidisciplinary network to address agriculture worker health and safety issues. The center also has an **outreach** component to disseminate and collect information from stakeholders; a **pilot projects program** to foster new partnerships, explore new opportunities and address emerging issues in the field of agricultural safety and health; and an **evaluation** program to monitor and assess the performance and outcomes of the Center.

Relevance:

The agriculture industry is challenged with responding to an increasing global demand for a safe and plentiful food supply that is both affordable and produced in a sustainable manner. To meet this demand the industry will develop novel approaches to producing food. The changes accompanying food production will also impact the people who produce the food. The complex and varied nature of the agricultural workplace contributes to agriculture being one of the most hazardous occupations. As agriculture evolves to meet increasing global food demand, the occupational health risks encountered by the agricultural work force will evolve with some hazards being eliminated and others emerging. The changing face of agriculture will also change who is producing food. Small family owned and operated farms may give way to larger enterprises that hire the majority of their labor force; including many who have no background in agriculture. Understanding and managing these changes is essential to protecting the health of agriculture workers and their families.



The Upper Midwest Agricultural Safety and Health Center (UMASH) conducts research, education and prevention activities aimed at improving the health and safety of workers and their families. The UMASH investigates how this evolving industry is changing the risks agricultural populations face. It develops improved methods to identify and reduce risks and it explores how best to interact with producers, agricultural workers and their families, and the broader agriculture community.

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SECTION II

Program highlights

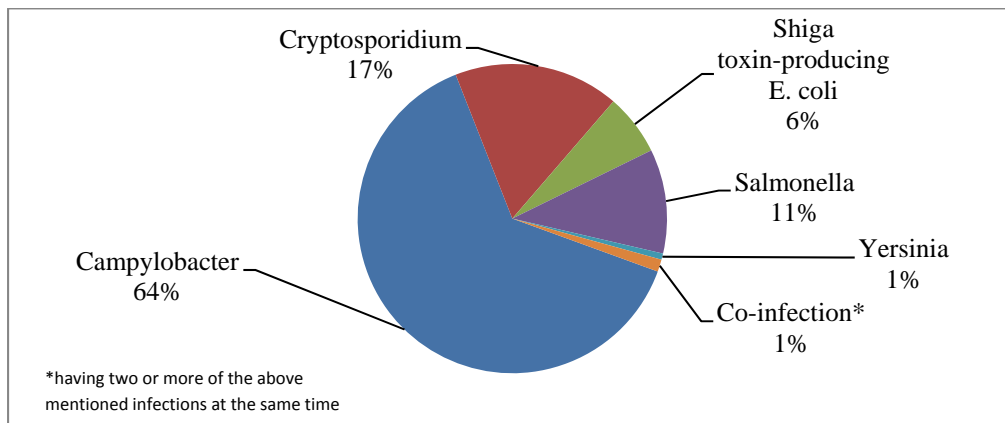
Research Projects:

Surveillance for Zoonotic Diseases in Agricultural Workers in Minnesota

Agriculture is a large part of Minnesota's economy supporting more than 340,000 people through direct production and processing support services. Zoonotic diseases (diseases that can be passed between animals and people) are a known hazard to agricultural workers, their families, and others exposed to food animal production settings. However, little information exists explaining specific risk factors for the development of zoonotic diseases and how frequently agricultural workers and their families get sick from food animals each year. This project is leading to a better understanding of zoonoses in agriculture populations which can be used to develop effective prevention measures to minimize the occurrence of zoonotic diseases.

In 2013, 329 (14%) of the 2,290 people with an illness due to *Salmonella*, *Campylobacter*, Shiga toxin-producing *E. coli*, *Yersinia*, or *Cryptosporidium* in Minnesota had an agriculture exposure (living on a farm; working on a farm; visiting a farm; visiting a petting zoo, fair, or other venue with food animals). Of the 329 ill people, 156 (47%) either lived or worked on a food animal farm in the week prior to their illness. The most common infection among those living or working on a farm was *Campylobacter* followed by *Cryptosporidium* and *Salmonella* (Figure 1).

Figure 1. Type of infection among those living or working on a farm.



Looking at the overall population of Minnesota, for every 100,000 people there were 14.9 *Campylobacter* cases. When we only looked at people who live or work on a farm, for every 100,000 people there were 69.3 cases of *Campylobacter*. In other words, people who live or work on a farm in Minnesota are 4.6 times more likely to get a *Campylobacter* infection than those who do not live or work on a farm. Additionally, people who live or work on a farm in Minnesota are 3.5 times more likely to get a *Cryptosporidium* infection and 1.4 more times likely to get a Shiga toxin-producing *E. coli* infection.

Education continues to be a large component of our project. Nearly half of the people interviewed were interested in receiving more information about the germ that made them sick and what precautions to take in agriculture settings. These people were sent Minnesota Department of Health (MDH)-developed **educational fact sheets**. During interviews, we also offered free bacterial and parasitic testing of livestock and poultry. Two farms elected to having testing done. We collected 22 fecal samples from livestock, and 19 of those samples tested positive for either a bacterial or parasitic zoonotic germ. These results, as well as education were provided to the farm owners.



In 2013, there were 66 cases of animal rabies in Minnesota. Seventeen (26%) of the 66 animal rabies cases occurred in agriculture settings and resulted in 19 people being recommended to receive rabies shots. The Minnesota Department of Health posted two stories about rabid animals on farms to the **Ag Safety and Health Spotlight: Stories from the Field** section of the UMASH website. MDH is preparing a third story regarding a rabid dairy cow whose milk was placed in the bulk tank. Several people, both on the farm and off the farm, drank raw milk from this bulk tank. Although there is only a theoretical risk of rabies transmission from raw milk, there simply aren't enough data to say whether or not it's safe to drink. MDH has also posted another story from a farm family whose child developed a severe *E. coli* O157:H7 infection that required hospitalization; the child was likely infected by drinking raw milk from the farm. We will continue sharing these stories through the UMASH website.



The forestry and logging industry is also considered a part of the agriculture industry. In Minnesota tickborne diseases pose an occupational risk to these workers. However, only three (0.2%) of the 1,456 tickborne disease cases (babesiosis, human anaplasmosis, and Lyme) reported in Minnesota in 2012 worked in the forestry and logging industry. This percentage suggests that tickborne diseases are not a major occupational health risk for people working in the forestry and logging industry in Minnesota.

MRSA Colonization and Infection in Swine Veterinarians

Public health concern about the emergence of methicillin resistant *Staphylococcal aureus* (MRSA) in livestock, particularly pigs, is increasing. However, there is limited scientific information on the importance of livestock associated MRSA in human populations. The overall objective of this study is to analyze long-term patterns of *S. aureus* colonization (both methicillin resistant (MRSA) and methicillin susceptible (MSSA) strains) and infection of swine veterinarians. Concurrently, a survey of occupational hazards for US swine veterinarians and current practices for risk reduction is being conducted to assess current practices in relation to existing recommendations and guide educational efforts to promote better practices for veterinarians and other groups who are occupationally exposed to animals.



A study cohort of 68 swine veterinarians across 15 states was recruited to participate in a longitudinal study to determine the incidence and prevalence of nasal colonization of MRSA and MSSA. The sampling was completed for most subjects in December, 2013, apart from 2 subjects who were recruited later, and compliance with sampling was extraordinary (over 98%) yielding 1768 *S. aureus* isolates (including 207 MRSA) to date.

Sampling for all subjects will be complete in March, 2014. Two subjects left the study (one due to migration; another due to change in employment). Bacteriological evaluation has been all samples through December, 2014. Preliminary findings indicate that 3 lineages of *S. aureus* constitute over 90% of isolates from swine veterinarians, and that these same lineages also predominate in the US swine population (from a parallel study), suggesting that they are commonly contaminated with *S. aureus* from the swine population. Prevalence is highest when samples are collected recently (<2 days) after contact with pigs. The prevalence of MRSA is approximately 8% (much lower than 44% reported in a similar Dutch study) and has remained relatively stable throughout the study. Most veterinarians are intermittently and transiently colonized, but a substantial minority (about 20%) appear to be persistently colonized. Additionally an online survey is being administered to approximately 400 US swine veterinarians to determine the occurrence of occupationally related health events in US swine veterinarians, focusing on skin and soft tissue infections. Data collection is being continued until April 2014, and will be used to assess the personal protection practices of US swine veterinarians and will permit analysis of associations between risks of colonization/infection of swine veterinarians with MRSA/MSSA, exposure to pigs and the use of personal protective equipment.

Occupational Hazards in Pork Production Associated with Production Practices

One potential occupational hazard of raising pigs is exposure to airborne contaminants, including hydrogen sulfide, ammonia, endotoxin, and particulate matter. At sufficient concentrations these contaminants can affect the respiratory system. Several factors can influence contaminant levels in pig rearing operations, such as the design of the structures, the concentration of animals, and ambient weather conditions. As pork production practices change to meet the animal health, economic, and societal concerns it is likely the potential exposures to workers will also change. Control of these contaminants requires an understanding of how production related factors that may be influencing the exposures. One of the aims of this project is to systematically sample air contaminants in facilities that use different rearing methods and characterize the seasonal influence on exposures. In the last year we have conducted intensive monitoring to compare air quality in sow barns using open pen or gestation crates housing arrangements, and finishing barns using different feed delivery systems. The initial results indicate that while exposures are within regulatory levels, there is considerable variation in exposure to ammonia, carbon dioxide, and hydrogen sulfide by season, with levels up to ten times higher in winter than in summer. There also appears to be some potential differences by sow housing methods. The contaminant concentrations are also being tracked on an hourly basis to identify activities and other factors that may lead to changes in exposure. The measurement of air contaminants will be complemented by evaluations of worker injury risk in the different types of facilities. Ultimately this information will be available to producers to help control potential health risks to workers.

Surveillance of Disease and Injury in Wisconsin Dairy Farmers and Workers

The main objective of this project is to establish and maintain a working surveillance system for dairy farms in Wisconsin in order to identify disease and injuries among farmers and farmworkers in Wisconsin. This is particularly important as dairy's become more modernized, and as the diversity of their workforce changes. With dairy's dotting much of the landscape of central Wisconsin, a rich study cohort is available right at the doorstep of the National Farm Medicine Center (NFMC) in Marshfield Wisconsin. Because dairy is the most important agricultural resource in Wisconsin, results from this project will impact many factors ranging from medical expenditures and/or



hospitalization rates to agricultural safety policies and procedures. This coupled with an update to the NFMC Farm Cohort will provide a wealth of agricultural health and safety knowledge as the project moves forward.

Currently the initial survey will be mailed out to selected dairies by early spring. Once we start receiving these surveys back we will begin to see some preliminary results. We hope to have a summary document by next fall summarizing our initial survey results. We will use what worked and what did not work to adjust our survey for the second round in the coming years.

The most difficult population to identify is non owner dairy workers. Often workers are not covered for injuries by workers compensation because the number of employee on the farm is below the minimum required to buy workers comp. Thus use of worker compensation records gravely underestimates dairy injuries. As a result, we have developed a Natural Language Processing (NLP) method to extract data from our electronic medical record and quantify injuries from dairy events, not just among known dairy owners but also non-owner dairy workers.

Education and Translation Projects:

Facilitating Return to Work for Injured and Ill Animal Agriculture Workers

Dairy farms continue to become larger with increases in work task specialization. These mega-herd operations introduce significant occupational risk factors for workers. Risk of injury is 2.5 times greater among dairy farm residents than among non-dairy farm residents. In Wisconsin, work-related injury and illness sustained by farm workers who have workers compensation are serious and expensive, as they generate among the top 10 highest costs per claim. Despite the frequency with which clinicians are faced with managing the return to work of injured workers to light or modified duty, most have little training in the skill.



This project is developing a return-to-work computer application to guide clinicians in returning injured farm workers safely back to work. It would help injured workers retain their skills and maintain their lifestyle. It may help reduce an economic burden on farmers by reducing workers' compensation costs. This project would also increase worker participation in the return-to-work decision making and increase effective communication between the farmer, worker and clinician.

Feedback from end users such as clinicians, farmers and workers are gathered throughout the application development phase. A clinician who was interviewed commented on the value of this project stating that "it's important to return workers to work and let them do what they can do. For farm owners and farm workers that depend upon the income or their own labor, [the present system for returning injured workers to light duty] is ineffective because it's not practical." In the last year, the project team has followed suggestions from a focus group of Hispanic workers who recommended adding an easy-to-read, Spanish version of the return-to-work sheet for workers like themselves. This Spanish worker sheet along with sheets for different end users will be customized and generated through the interactive, online, return-to-work computer application.

Seguridad en las Lecherías: Immigrant Dairy Worker Health and Safety

Dairy is the most important agricultural activity in Wisconsin. With a strong workforce of over 70,000 individuals, it is estimated that almost half are Hispanic immigrants. Large animal agriculture is among



the most hazardous agricultural activities and workers in dairy face significant health and safety risks. Increasing numbers of immigrant employees with unaddressed language barriers and training needs add to the challenges of improving safety for the dairy workforce. Wisconsin dairy farmers have rated improved working conditions and improved safety within their top three “people-based” priorities motivating economic decisions. Yet, few alternatives are available to address the health and safety training needs of the changing workforce.

The *Seguridad en las Lecherías* (Safety in Dairies) project bridges this gap by providing a bilingual health and safety program for immigrant dairy workers in Wisconsin. This program includes a five module training curriculum designed and

tested to educate workers in reducing worksite hazards and improving health and safety knowledge and practices. It is delivered on the farm and engages workers using culturally appropriate education techniques to ensure understanding by workers with low levels of literacy and limited formal education. Picture-based resources are provided to all workers attending the training to underscore important safety messages reviewed during the training workshops. A ‘train-the-trainer’ approach and *promotores de salud* (community health workers) are employed as part of this project to help deliver training to hundreds of dairy workers and to reinforce health and safety messages on an ongoing basis. The curriculum has gained approval from the Occupational Safety and Health Administration (OSHA) and endorsement by dairy producers and the Mexican Consulate in St. Paul. Partner organizations including the University of Wisconsin River Falls’ Center for Dairy Farm Safety are using the curriculum to train dairy workers. To date, this project has trained over 160 workers in ten farms providing a total of 629 training hours with farms already scheduled for training in the next year. Workers participating in the trainings show a clear increase in safety knowledge.

WORKER TRAININGS



date,

Multidisciplinary Network to Address Agriculture Worker Health and Safety Issues

Summary:

UMASH Network Project has continued to expand the group of stakeholders interested in agricultural safety and health and to develop tools that support this objective.

This year, the Network Project staff have been involved or supported:

- Wisconsin OSHA who incorporated UMASH needlestick prevention information into Dairy Local Emphasis Programs
- The insurance industry to further promote and incentivize agricultural worker safety and health.
- Programs to research and promote “low-stress animal handling techniques” to ultimately protect livestock workers.

- The development of a smart phone and computer application for healthcare providers to provide detailed information when agricultural workers are exposed to veterinary biologics.
- Continued engagement of veterinarians to conduct outreach to dairy farmers and dairy workers with agriculture safety and health surveys, information, and best practices.
- Identifying and accessing agricultural worker injury data sources (work comp data and farm worker survey data) to better describe worker injuries and use local regional data to drive prevention efforts.

Needle-stick Injuries in Livestock Workers

- OSHA's 2014 Dairy Local Emphasis Program in Wisconsin now includes Needlestick injury information and resources. This inclusion will increase outreach and education about needlestick injury prevention with dairy producers. Inclusion in this program also increases the emphasis placed on the topic during inspection. Incorporating this topic into OSHA documents makes it a system-based program.
- Building on the needlestick research and the swine veterinary biologics database, a smart phone application is now being explored for development. The preliminary data has been collected for swine biologic exposures. This “app” would enable smartphone users to have information about veterinary biologics at their finger tips—providing the best possible detailed technical information when agricultural workers are exposed to these agents through needlestick injuries or other events.
- The UMASH program continues to seek opportunities to engage producers, veterinarians, and workers about needlestick injury prevention. This includes sharing of findings at producer and agriculture worker conferences. Needlestick prevention and management outreach tools are now available and accessible via the UMASH website.



Insurance industry engagement to promote worker injury prevention

The UMASH Network Program is actively engaging representatives from the insurance industry to explore prevention opportunities and financial incentives to drive worker safety and health protections. Initial work with a relatively small group (six insurers in Minnesota cover approximately 75% of farm owners) of insurers could result in prevention efforts that affect a large number of farms and workers. Large farms also carry worker's compensation insurance coverage offering additional intervention avenues. Both of these opportunities for system-level approaches to agricultural safety and health are under exploration. Minnesota Workers Compensation Insurance Association has been an active supporter of UMASH's pursuit of up-to-date, region specific agricultural worker injury data.



Animal Handling Techniques to Protect Livestock Workers

- The UMASH Center continues to engage dairies in Minnesota and now Wisconsin to promote stockmanship or “low-stress livestock handling techniques”. Stockmanship holds much potential for protecting livestock workers and promoting humane livestock handling. The UMASH Network Project has leveraged additional funds to explore the impact of low-stress livestock handling on animal health and worker wellbeing.
- Preliminary research has documented that producers who practice “low-stress livestock handling techniques” have higher milk production.

The Network Project is continuing to work with the University of Minnesota Extension, College of Veterinary Medicine and local veterinarians, to provide classroom and on-site training for dairy farmers in Minnesota.

Engaging Veterinarians in Agricultural worker health and safety

- The Network project is collaborating with area veterinarians to evaluate worker health and safety at small to medium size dairy farms in Minnesota and Wisconsin. The veterinarians are active, distributing and promoting dairy worker injury surveys offered in both English and Spanish
- Engaging veterinarians to provide outreach and as a method to reach dairy farmers and dairy workers with agriculture safety and health information and best practices.
- Working with veterinarians develops multiple aspects of our network team—producers, workers and practicing veterinarians.

Outreach and Engagement

Connecting with our stakeholders continues to be a key mission of UMASH. Together with our partner organizations and evaluation team, we have developed a systematic and multi-disciplinary approach to identifying stakeholders and effective communication linkages with them. Our contact and stakeholder base includes agribusinesses, cooperative extension of regional states, health care provider organizations, producer groups, university (academic) departments; target groups include academic faculty, health professionals, farm families, farmworkers, ethnic/minority workers, general public, insurance and discipline specific professionals in agricultural engineering, agricultural science, animal science, education, medicine, environmental health, epidemiology, industrial hygiene, nursing, public health, toxicology, and veterinary medicine. During 2013 we have reached out to more community groups with interests in animal and human worker welfare and species/product specific community and commodity groups as well as immigrant workers and their employers.



UMASH outreach team members have a daily interactive presence on Facebook, which links from the UMASH website, active Twitter dialogue, and most recently through the combined Centers YouTube channel. We have highlighted spotlight stories that focus on local events directly related to agricultural and environmental safety, One Health Issues and industry specific topics.

Our quarterly newsletter “The UMASH Connection: Farms and People” was published Spring, Summer and Fall 2013 for a total of five volumes to date and is archived on the website. Also hosted on the UMASH website are project updates and faculty presentations. During 2013 UMASH personnel have presented Center and project information at more than 16 conferences, seminars and symposiums. Print materials for Center promotion and outreach include the quarterly newsletter, a poster, general and event-specific trifold brochure, flier, general and event specific postcards, and business cards for all staff. Successful leveraging of resources with Center partners has resulted in the development of the Migrant Clinicians Network “Bilingual Health and Safety Pictionary”; the Agriculture Safety Consulting program developed by the National Farm Medicine Center is developing systematic tools that producers can use to improve safety and comply with regulatory requirements, and the Minnesota Department of Health has developed timely and relevant fact sheets on zoonotic disease prevention and control and a first person farm family story of health and safety interest available in our new ‘Ag Spotlight’ feature which are all posted for consumer use on our website at umash.umn.edu.



Evaluation:

Understanding the impact of the UMASH center continues to be important to ensuring effective and impactful use of the Center’s resources. The UMASH is partnering with the Minnesota Evaluation Studies Institute at the University of Minnesota to implement the evaluation program for the UMASH center.

Stages of Collaboration Project

This project began in 2012 to evaluate current and desired levels of collaboration across and beyond the UMASH Center through interviews and creation of collaboration maps with project PIs and team members. This approach facilitated Center members’ strategic thinking about their work in more systematic ways and will provide meaningful information for the Center’s strategic planning process in the next year.

Stakeholder Gap Analysis

This project evaluated power and interest levels of UMASH stakeholders through interviews and mapping activity with UMASH Advisory Board Members in 2012. The results are being used to plan and evaluate Outreach and communication activities and will also be used for the Center’s strategic planning.

Evaluation of UMASH Pilot Projects Program

This project is reviewing the 2012 funded pilot projects for the purpose of improving the Pilot Project Program by evaluating the extent to which the 2012 funding projects fulfilled the program goals. Results will be used to improve the Pilot Projects program.

Assessing the UMASH Monitoring System for Capturing Key Outputs and Outcomes

The purpose of this evaluation is to understand and improve UMASH’s current monitoring system for key outputs and outcomes data and to improve accountability reporting to funders and stakeholders. Initial activities have focused on reviewing and updating project logic models with each of the UMASH Project teams. Information from this process will inform the development of a systematic monitoring and reporting process.

The evaluation team continues to monitor the reach and impact of the UMASH website and quarterly newsletter, the *UMASH Connections: Farms and People*. Since the redesign of the newsletter in early 2013, the open rate of the newsletter and other UMASH email blasts are typically in the 25-30% range for 'opens' with 2-7% 'click' rates. Comments from a November 2013 reader were generally positive and respondents reported they usually read/scanned all or some of the newsletter, they found it easy to read and understand and they occasionally shared the newsletter with colleagues. The email distribution list is also being evaluated with respect to inclusion/exclusion of stakeholder groups taking into consideration the results of the stakeholder gap analysis.

UMASH participated in an Evaluation Workshop (April 2013) hosted by the High Plains Intermountain Center for Agricultural Health and Safety (HICAHS) in Fort Collins Co. This workshop brought together evaluators and staff from all of the NIOSH-funded Ag Centers & Children's Ag Center and with representatives from the NIOSH to continue the cross-center networking, resource sharing, and collaboration. Through this meeting, Center's were updated on evaluation activities across the Ag Centers and were able to identify key areas of importance to all centers that would benefit from coordinated efforts across some or all centers. Topics of primary interest include those related to outreach and communication, effective and consistent reporting systems/metrics, and communicating impacts; these initiatives are being moved forward through monthly teleconferences with evaluators and outreach staff and through smaller working groups.

Other Center Activities

Finding Common Ground Forum: *The Changing Agriculture Workforce: Challenges and Opportunities for the Worker, the Employer, and the Community.*



The UMASH Center, in conjunction with the University of Minnesota's Center for Integrative Leadership and Global Initiative for Food Systems Leadership sponsored a second "Finding Common Ground," forum designed to foster conversation among participants with diverse perspectives to discover and advance a common understanding. More than 60 agricultural workers farmers, health professionals, extension educators, university faculty and other interested individuals gathered to discuss the changing agriculture workforce and its implications on worker health and safety as well as agriculture. The consensus ideas developed in this forum will be included as a focus for the next pilot projects program call for proposals.

Pilot Projects Program

The UMASH pilot project program provides grant funding to explore new areas and build new partnerships in agricultural safety and health. The pilot project program emphasizes projects that address National Occupational Research Agenda (NORA) objectives for agriculture and approach One Health problems in agriculture. It is anticipated that the pilot projects will foster additional work in these areas

2012 Pilot Project Updates:

- **Pilot Project Exploratory Immunologic Differences in Cord Blood from Infants Born into Farming Environments Compared to Non farming Environments in MESA**
University of Wisconsin Madison (UWM).

This project provided preliminary data for a larger study to address the hypothesis that in utero exposure to farming environment results in innate immune responses at birth that are more robust than exposure to non-farming environments. This partnership allowed the UWM to successfully leverage its work with NFMC and obtain a 5-year grant from the National Institute of Health totaling almost \$4 million to conduct a more comprehensive version of the study.

- **Design Guidelines for Healthy and Safe Animal Production Building Systems**

Center for Rural Design, University of Minnesota

This project conducted stakeholder workshops and identified categories of design interventions for animal housing that through their utilization in the design, construction, and management of these buildings will lead to safer and healthier operations for workers. In 2013, the research team drafted a new research proposal that builds on the outcomes of this project to provide specific and implementable strategies for addressing worker safety issues in the animal agriculture industry.

- **Characterization of shiga-toxin producing E. coli infections and cryptosporidia in South Dakota with respect to agricultural exposures and other risk factors.**

South Dakota State University

This project showed that animal contact on farms is an important exposure route, one that will benefit from more study and educational messages regarding person protective measures. The information gained from this project will be used to inform stakeholders in South Dakota and elsewhere regarding these illnesses. It is anticipated that risk factors identified in this descriptive work will be instructive for agriculture workers and their families seeking to keep themselves safe from these infections.

- **Developing Culturally and Linguistically-Appropriate Pesticide/Chemical Education Materials for Hmong Produce Growers**

Bioproducts and Biosystems Engineering Department and University of Minnesota Extension

This project used in-person, hands-on teaching techniques to share vital pesticide safety information with Hmong-American farmers. Peer-to-peer training methods were successful and should be encouraged when working with this community. A personal protective equipment (PPE) poster was created using input from the Hmong-American farmers. The farmers prefer a poster-sized visual reminder that can be hung in their packing shed, garage, or other work area. They requested simple English words and phrasing. The poster can be downloaded from the UMASH website: <http://umash.umn.edu/projects/2012pilot/hmong.html>

2013 New Pilot Project Awards

The 2013 UMASH pilot project program engaged four new programs including two projects that following up on consensus ideas from the January 2013 *Finding Common Ground Forum: Improving Animal and Worker Health and Welfare*.

- **Pilot project to develop healthy fair and petting zoo workshops in Minnesota**

Minnesota Department of Health

This project developed and organized “Health Fair” workshops to educate fair and petting zoo operators about industry best practices for running a safe fair/zoo with the goal of reducing illness associated with animal contact at these events.

- After two successful workshops in 2013, one in Rochester and one in St. Cloud, two additional workshops are being planned for April 2014 in Marshall and Bemidji to allow people in those regions the opportunity to attend.
 - An article about the workshops was published in the January/February 2014 issue of *Fairs & Expos*, a publication of the International Association of Fairs and Expositions.
 - The research team presented about the workshops at the January 2014 convention of the Minnesota Federation of County Fairs; 41 people attended the session.
 - The relationships built through this project are already increasing communications with fair partners about current issues such as human swine influenza at county fairs. As a precautionary measure in Minnesota, postcards were sent to 4H families involved in swine projects alerting them to the issue, symptoms to watch for and to see their doctor if they get sick.
- **Incorporating Worker Safety Programs with Quality Assurance**
College of Veterinary Medicine and the School of Public Health, University of Minnesota.
This project will evaluate and make recommendations for implementing worker safety programs with Quality Assurance (QA) programs targeted at large animal production livestock (cattle and swine). While not explicitly geared toward worker safety, the industry wide nature of the Quality Assurance programs, the level of acceptance by producers, and the focus at the worker level provide an opportunity to incorporate materials targeted specifically at worker safety and health as a focus. *This project was funded to follow-up on ideas generated at the 2013 Finding Common Ground Forum: Improving Animal and Worker Health and Welfare.*
 - **Aflatoxin exposure in the allergic lung: agriculture-related health pilot project**
North Dakota State University
The objective of this project is to determine the extent to which secondary exposures to aflatoxin (a mycotoxin) can impact the development and maintenance of fungal allergic asthma. Agricultural operators/Occupational workers are continuously exposed to a complex mix of chemical, biological, and particulate insults and are at risk for developing chronic inflammatory lung diseases. The research is intended to allow farmers and ranchers to make evidence-based health and safety decisions for their animals, families, and communities.
 - **Laying a New Foundation for Engaging Agricultural Media Gatekeepers in Covering Agricultural Safety and Health**
Agricultural Communications Documentation Center, University of Illinois and the Communications Program, National Farm Medicine Center, Marshfield WI
This project will lay the foundation for expanded and innovative coverage of agricultural safety and health by agricultural media through a systematic evaluation of agricultural media coverage in terms of attitudes, amount of coverage, topics addressed, constraints affecting media coverage and examples of effective approaches being used. Findings will guide efforts to encourage increased coverage and provide resources agricultural media can use to do so. *This project was funded to follow-up on ideas generated at the 2013 Finding Common Ground Forum: Improving Animal and Worker Health and Welfare.*